



Lochtefeld

[11] Patent Number: 5,899,634

[45] **Date of Patent:** **May 4, 1999**

[54] SIMULATED WAVE WATER SCULPTURE

[75] Inventor: **Thomas J. Lochtefeld**, La Jolla, Calif.

[73] Assignee: **Light Wave, Ltd., Reno, Nev.**

[21] Appl. No.: 08/735,418

[22] Filed: Oct. 22, 1996

[51] Int. Cl.⁶ A63B 69/00

[52] U.S. Cl. 405/79; 239/17

[58] **Field of Search** 405/79, 52, 21;
4/491; 472/128, 13; 239/17, 23, 20

[56] **References Cited**

U.S. PATENT DOCUMENTS

490,484	1/1893	Mackaye .	
586,718	7/1897	Wharton .	
1,701,842	2/1929	Fisch .	
1,871,215	8/1932	Keller et al. .	
3,473,334	10/1969	Dexter .	
3,557,559	1/1971	Barr .	
3,562,823	2/1971	Koster .	
3,598,402	8/1971	Frenzl .	
3,802,697	4/1974	Le Mehaute .	
3,913,332	10/1975	Forsman .	
4,339,122	7/1982	Croul .	
4,564,190	1/1986	Frenzl .	
4,792,260	12/1988	Sauerbier .	
4,905,987	3/1990	Frenzi .	
4,954,014	9/1990	Sauerbier et al. .	
4,955,540	9/1990	Fuller et al. .	
5,005,762	4/1991	Cacoub	239/23
5,115,973	5/1992	Fuller et al.	239/20
5,171,101	12/1992	Sauerbier et al. .	
5,236,280	8/1993	Lochtefeld .	
5,271,692	12/1993	Lochtefeld	405/79
5,342,145	8/1994	Cohen	4/491
5,387,159	2/1995	Hilgert et al. .	
5,393,170	2/1995	Lochtefeld	405/79
5,401,117	3/1995	Lochtefeld .	
5,564,859	10/1996	Lochtefeld	405/79

FOREIGN PATENT DOCUMENTS

0298853	1/1989	European Pat. Off. .	
9006790	6/1990	WIPO	405/79

OTHER PUBLICATIONS

"The Flow Rider". Independent Professional Survey. *BIM International Magazine*, vol. 2, #4.

"These Waves Win Raves". On The Scene, *Sports Illustrated*.

"Surfing Motion . . . Miles From the Ocean," *National Geographic World*, Jul. 1994.

"Flow Rider FunDamentals"—Wave Loch brochure.

"A Stationary Oblique Breaking Wave For Laboratory Testing of Surfboards". H.G. Hornung and P. Killen. Department of Physics, School of General Studies, Australian National University, Canberra. May 7, 1976.

"Model Studies for a Wave Riding Facility." P.D. Killen, University of Queensland. Aug. 1980.

"A Facility For Wave Riding Research." P.D. Killen and R.J. Stalker, Department of Mechanical Engineering University of Queensland, St. Lucia, QLD. 4067 Australia. Nov./Dec. 1980.

"The Wave," Jim Dunn. Jan. 1992.

Primary Examiner—Tamara L. Graysay

Assistant Examiner—Frederick L. Lagman

Attorney, Agent, or Firm—Knobbe, Martens Olson & Bear,
LLP

[57] **ABSTRACT**

A water sculpture is provided having an upwardly inclined flow surface. A flowing body of water is caused to flow upon the flow surface simulating various desired wave shapes. A variety of aesthetic wave shapes can be created, such as an unbroken wave face, a white water bore, a spilling breaking wave, or a tunnel wave. In one embodiment a walk-through water sculpture is provided such as for an entranceway of a building or the like.

41 Claims, 17 Drawing Sheets

